CLAIMS

1. (Original) A multi-stratum multi-timescale control system for a network, said system comprising:

routing means operating at a first stratum on a first timescale for providing routing functions;

resource allocation means operating at a second stratum on a second timescale for providing resource allocation functions;

provisioning means operating at a third stratum on a third timescale for providing provisioning functions;

each successive timescale being coarser than its preceding timescale; and

wherein a lower stratum network function provides network information to a higher stratum network function, said higher stratum network function making control decisions based on said network information.

2. (Original) A system according to claim 1 wherein said routing functions provide said network information in the form of a routing index metric.

3. (Original) A system according to claim 2 wherein said routing index metric is created based on automated measurements of a plurality of routes in a route set.

4. (Original) A system according to claim 3 wherein said measurements comprise state information measurements along an entire route.

5. (Original) A system according to claim 2 wherein said routing index metric is based on route depth.

6. (Original) A system according to claim 2 wherein said routing index metric is based on constituent traffic.

7. (Original) A system according to claim 2 wherein said routing index metric is based on traffic classification with respect to defined thresholds.

8. (Original) A system according to claim 2 further comprising means for measuring efficacy of route selection in said network based on said routing index metric.

9. (Original) A system according to claim 1 wherein said resource allocation functions provide said network information in the form of a resource allocation index metric.

10. (Original) A system according to claim 9 wherein said resource allocation index metric is created based on automated measurements of prior resource allocation data.

11. (Original) A system according to claim 9 further comprising means for measuring efficacy of resource allocation in said network based on said resource allocation index metric.

12. (Original) A system according to claim 1 wherein said resource allocation functions comprise functions which configure the network so as to satisfy resource allocation requirements.

13. (Original) A system according to claim 1 wherein said provisioning functions provide said network information in the form of a constituent traffic metric.

14. (Original) A system according to claim 13 wherein said constituent traffic metric is created based on automated measurements of the amount of traffic carried on various links of the network.

15. (Original) A system according to claim 14 wherein said measurements comprise measurements of accepted primary traffic, accepted secondary traffic, and rejected traffic.

16. (Original) A system according to claim 13 wherein said constituent traffic metric determines network provisioning requirements.

17. (Original) A system according to claim 1 wherein said routing means includes an edge controller, said resource allocation means includes a core controller, and said provisioning means includes a network controller.

18. (Original) A system according to claim 1 wherein said resource allocation means and said provisioning means are integrated.

19. (Original) A system according to claim 1 wherein said second stratum and said third stratum are integrated.

20. (Original) A system according to claim 1 wherein said second timescale and said third timescale are the same timescale.

21. (Currently Amended) A multi-timescale control method for a network wherein each of successive timescales in said network is coarser than its preceding timescale, said method comprising the steps of:

a) performing, on a first timescale, a routing function, said routing function including determining resource allocation requirements based on a routing index;

b) performing, on a second timescale, a resource allocation function, said resource allocation function including determining resource augmentation requirements based on a resource allocation index;

c) calculating, on a third timescale, network provisioning requirements based on said resource augmentation requirements, whereby said network provisioning requirements ~~may be~~are provided for a resource augmentation decision.

22. (Original) A method according to claim 21 wherein step a) comprises:

measuring at least one parameter relating to a plurality of routes in a route set; and

compiling a routing index metric based on said measured parameters.

23. (Original) A method according to claim 22 wherein said step of measuring at least one parameter relating to a plurality of routes in a route set comprises collecting state information measurements along an entire route.

24. (Original) A method according to claim 23 wherein said measurements are collected for a connection that is denied along said route.

25. (Original) A method according to claim 22 further comprising the step of measuring efficacy of route selection in said network on the basis of said routing index metric.

26. (Original) A method according to claim 21 wherein step b) comprises configuring network resources to satisfy said resource allocation requirements.

27. (Original) A method according to claim 21 wherein step b) comprises compiling a resource allocation index metric created based on automated measurements of prior resource allocation data.

28. (Original) A method according to claim 27 further comprising the step of measuring efficacy of resource allocation in said network on the basis of said resource allocation index metric.

29. (Original) A method according to claim 21 wherein step c) comprises:

measuring the classification and amount of traffic accepted and rejected on various links of the network system; and

compiling a constituent traffic metric on the basis of said traffic measurements.

30. (Original) A method according to claim 21 further comprising the step of providing network provisioning requirements based on said constituent traffic metric.

31. (Currently amended) An edge node controller having program code stored in a computer readable medium, the program code being ~~comprising~~ operable when executed to:

~~means for receiving~~ receive a connection request ~~from a source node~~;

~~means for identifying~~ identify a sink node from said connection request;

~~means for selecting~~ select a route set based on identification of said source node and said sink node;

~~means for selecting~~ choose a candidate route from said route set in order of rank;

~~means for signaling~~ signal a connection on said candidate route;

~~means for receiving~~ receive measurements taken along said candidate route;

~~means for computing~~ determine a routing index value ~~metric~~ for said candidate route;

~~means for updating~~ update a routing index metric with said route index value; and

~~means for transmitting~~ transmit resource allocation requirements to a core node controller.

32. (Original) An edge node controller according to claim 31 wherein said measurements include state information measurements along the entirety of one of an accepted and a rejected candidate route.

33. (Currently amended) An edge node controller according to claim 31 wherein said routing index metric is based on route depth, said route depth being a rank of said one of an accepted and a rejected candidate route.

34. (Original) An edge node controller according to claim 31 wherein said routing index metric is based on constituent traffic.

35. (Original) An edge node controller according to claim 31 wherein said routing index metric is based on traffic classification with respect to defined thresholds.

36. (Currently amended) An edge node controller according to claim 31 further comprising ~~means for measuring~~ program code operable when executed to measure efficacy of route selection based on said routing index metric.

37. (Currently amended) A core node controller ~~comprising~~ having program code stored on a computer readable medium, the program code operable when executed to:

~~means for receiving~~ receive a resource allocation requirement from an edge node controller;

~~a memory for storing~~ store a plurality of resource allocation requirements;

~~means for configuring resources in~~ configure at least one core node in response to said ~~stored~~ resource allocation requirements;

~~means for tracking~~ track failed resource configuration attempts;

~~means for computing~~ determine resource augmentation requirements based on said failed resource configuration attempts; and

~~means for transmitting~~ transmit said resource augmentation requirements to a provisioning means for calculating network provisioning requirements based on said resource augmentation requirements.

38. (Currently amended) A core node controller according to claim 37 further comprising:

~~means for computing~~ program code operable when executed to determine a resource allocation index based on said resource augmentation requirements.

39. (Original) A core node controller according to claim 38 wherein said resource allocation index is created based on automated measurements of prior resource allocation data.

40. (Currently amended) A core node controller according to claim 38 further comprising program code operable when executed to:

~~means for measuring~~ measure efficacy of resource allocation based on at least some information in said resource allocation index.

41. (Currently amended) A core node controller according to claim 37 further comprising program code operable when executed to:

~~means for determining~~ determine the severity of said resource allocation requirements; and

~~means for sorting~~ sort said plurality of resource allocation requirements according to severity.

42. (Original) A core node controller according to claim 37 wherein said provisioning means is provided on said core node controller.

43. (Canceled)

44. (Canceled)

45. (Canceled)

46. (Canceled)